

ALEXANDER von HUMBOLDT: THE FIRST ENVIRONMENTALIST

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[Ed. Note: This is the third installment of a four-part article on the life of Alexander von Humboldt. See Vol. 65 (3) and Vol. 65 (4) for Parts 1 and 2 of this article. Dr. Caswell is a retired chemistry professor who has an award winning exhibit on von Humboldt. He is a Director in the Society for Hungarian Philately and also a founding director of the Seattle Philatelic Exhibition.]

Ecuador

On 31 December 1801, the travelers entered what is now Ecuador at Ibarra, a town on the border with Colombia. There they met Colombian physicist Francisco José de Caldas, the discoverer of the relationship between altitude and boiling point. (Fig. 30). Caldas traveled with them to the city of Quito, where the travelers were received as guests by Juan Pío Montúfar, the Marqués de Selva Alegre (Fig. 31).



Fig. 30. de Caldas on International Geophysical Year First Day Cover Colombia, 1958, Sc#680/C309-10

The son of the Marqués, Carlos Montúfar (Fig. 32), accompanied Humboldt for the remainder of his American expeditions, and went back to Europe with him.

Caldas applied to join Humboldt's expedition, but Humboldt rejected the request because Caldas did not have the resources to pay his own way. Caldas took offense about his rejection, and complained bitterly about it in a letter to the botanist Mutis.



Fig. 33. Expedition Maps Ecuador, 1986, Sc#1141

In the archives at Quito, Humboldt studied the maps and other records left by the La Condamine geodesic expedition of 1736 to measure an arc of the Equator, and the maps of the explorer Pedro Vicente Maldonado in 1750. Figure 33 reproduces maps left by both expeditions.

On 8 June 1802, Humboldt, Bonpland, and Montúfar left Quito, and traveled south on the old Inca road. Near the city of Loja they harvested quinine bark, in order to be prepared to treat any further attacks of malaria.



Fig. 31. Juan Pío Montúfar Ecuador, 1909, Sc#185



Fig. 32. Carlos Montúfar Ecuador, 1909, Sc#186

On 23 June, they attempted the ascent of Mount Chimborazo (Fig. 34), the world's highest volcano and the point on the Earth's surface that is farthest from the Earth's center. They achieved an elevation of 19,280 feet (5,877 m), 1,269 feet (386 m) below the summit and the highest elevation reached by a European up to that time.

They were driven back by cold and altitude sickness. The cold and altitude did not stop them from observing the plants that grew on the mountain, and collecting specimens. Late in July, the travelers ascended the Ecuadorian volcanoes Tungurahua (Fig. 35) and Cotopaxi.

Continuing down the Andes, Humboldt, Bonpland, Montúfar, and Caldas made three attempts to climb the volcano Pichincha, finally reaching the edge of the crater on 28 June. The local Indians attributed an earthquake on the following day to the "disturbance of the mountain's dust" by the explorers.

Figure 36 reproduces Humboldt's painting of "Travelers in the Andes," an illustration from Humboldt's book, *Vues des cordillères et monuments des peuples indigènes de l'Amerique* ("Views of the Cordilleras and Monuments of the Indigenous Peoples of America"), in which he described his Andean journey. The mountain in the background is the Cayambe Volcano. The bird on the stamp of Liechtenstein, a country that Humboldt never visited, is an Andean Condor (*Vultur gryphus*), which is described in the book.



Fig. 37. Ingapirca Ruins
Ecuador, 1956, Sc#C295



Fig. 34. Mount Chimborazo
Ecuador, 2000, Sc#513



Fig. 35. Tungurahua Eruption
Ecuador, 2006, Sc#1831

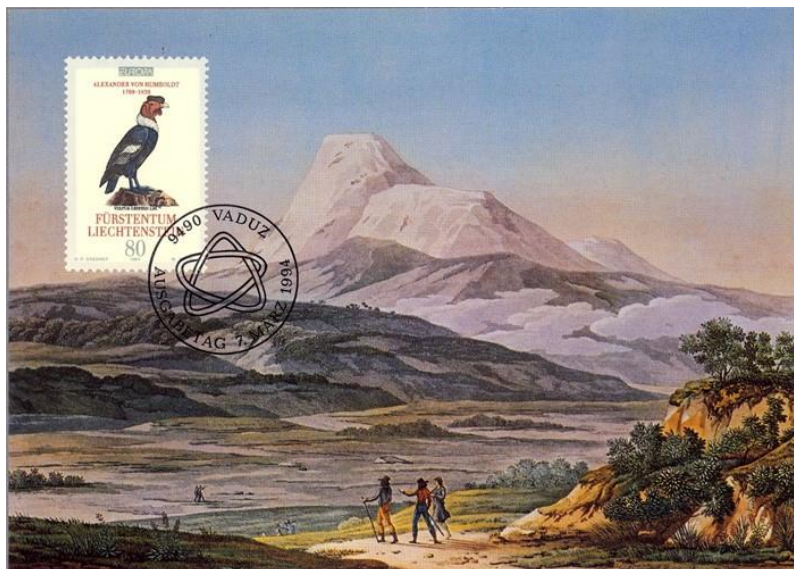


Fig. 36. "Travelers in the Andes" with stamp honoring Humboldt
Liechtenstein, 1994, Sc#1022

Along the Inca road, on the way to Perú they inspected the ruins of the palace of the Inca Tupac Yupanqui and the Inca Fortress of Ingapirca (Fig. 37).

They spent ten days in the old city of Cuenca, where a bullfight was held in their honor. Near the city of Loja, they harvested cinchona bark in order to be prepared to treat any further attacks of malaria.

Perú

On 3 August 1802, the travelers entered the Viceroyalty of New Castille (now Perú). They traveled up the Marañón River and into the mountains to Cajamarca, the city where the conquistador Pizarro captured the Inca Atahualpa.

From Cajamarca, the travelers went to the coast. Along the way, they inspected the ruins of Chan-Chan (Fig. 38), the capital city of the pre-Inca Chimu kingdom.

On 25 September, they came to the city of Trujillo on the Peruvian coast. There Humboldt measured the temperature of the ocean and discovered the cold, nutrient-rich Antarctic current, now known as the “Humboldt Current.”

He observed the harvesting of seabird guano and its use as fertilizer. His published description of the use of guano created a demand for it later in Europe. The Figures 39 and 40 show the Peruvian cormorant (*Phalacrocorax bougainvillii*), the source of guano, and its principal food, the Peruvian anchovy (*Engraulis ringens*).

Humboldt also recorded observations of the species of penguin, now known as “Humboldt’s penguin,” (*Spheniscus humboldtii*) (Fig. 41).

The travelers arrived at Lima on 23 October. Unlike his treatment by authorities in other parts of Spanish America, Humboldt’s reception by the Viceroy was cold and unfriendly, making him feel unwelcome. No explanation has been offered for this different behavior. A possible explanation may lie in the extensive corruption in the government of the Viceroyalty.

The Viceroy may have suspected that Humboldt had been sent as a spy to report on conditions in the Viceroyalty to the Spanish government. Some thirty years earlier such a report on these conditions had been prepared by Antonio de Ulloa, the director of the mercury mine of Huancavelica in Perú. The report had been suppressed.

Humboldt and his companions, however, received a cordial welcome from the physician Hipólito Unanue (Fig. 42), “the father of Peruvian medicine,” and not a member of the Viceroyal government. Unanue was their host during their stay in Lima. Unanue had an extensive library and collection of herbarium specimens, which he allowed Humboldt to examine.

In Lima, Humboldt met Czech botanist and explorer Tadeáš Haenke. The latter influenced Humboldt to publish his work on the influence of climate on plants, *Geographie der Pflanzen in den Tropen-Ländern: ein Naturgemälde der Anden* (“Geography of Plants in Tropic Lands: a Nature Painting of the Andes”). Figure 43 shows the frontispiece of this book. The white mountain is probably La Silla, near Caracas. The illustration of *Rhexia cardinalis* on the stamp reproduces an illustration from the book.

On 19 September of the following year, Humboldt, Bonpland, and Montúfar came to Callao, the port of Lima. Humboldt observed the transit of Mercury across the face of the sun and made further observations on the cold ocean current and the use of guano as a fertilizer.

A tête-bêche pair of stamps (Fig. 44) commemorate the bicentenary of Humboldt’s visit to Perú. The ship below his portrait is the Peruvian Antarctic research vessel *Humboldt*.

Almost three months later, on 5 December 1803, the travelers sailed from Callao to Guayaquil, in Ecuador, aboard the frigate *La Castora*. Along the way Humboldt made further measurements of water temperature.

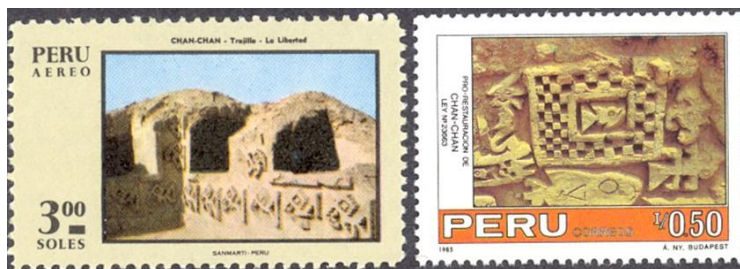


Fig. 38. Chan-Chan Ruins & Bas-relief
Peru, 1970, Sc#C294 & Peru, 1986, Sc#866



Fig. 39. *Phalacrocorax bougainvillii*
Peru, 1937, Sc#357



Fig. 40. *Engraulis ringens*
Peru, 1970, Sc#522



Fig. 41. *Spheniscus humboldtii*
Peru, 1985, Sc#853



Fig. 42. Hipólito Unanue
Peru, 1971, Sc#C318

On 9 January 1803, they disembarked in Guayaquil. They remained in Guayaquil a month, seeking passage to the Galápagos Islands, but found none.

It is interesting to speculate what Humboldt might have done, if he had visited the Galápagos thirty years before Darwin, made the same observations as Darwin (Fig. 45), and come to conclusions similar to Darwin's.

We know that Humboldt was open to the idea of evolution. He wrote that the way our arms swing when we walk, the right arm swinging forward when the left foot steps and the left arm swinging forward when the right foot steps, is an inheritance from the walking gait of a quadrupedal ancestor.

It remained for Darwin to find the mechanism of evolution in natural selection, and for modern paleo-anthropologists to find the fossilized bones of our quadrupedal ancestors.

Humboldt, Bonpland, and Montúfar, sailed on 15 February 1803, from Guayaquil aboard the frigate *Orúe*, headed for México. They disembarked at Acapulco in the Viceroyalty of New Spain (now Mexico) on 23 March.

[to be continued in the next edition]

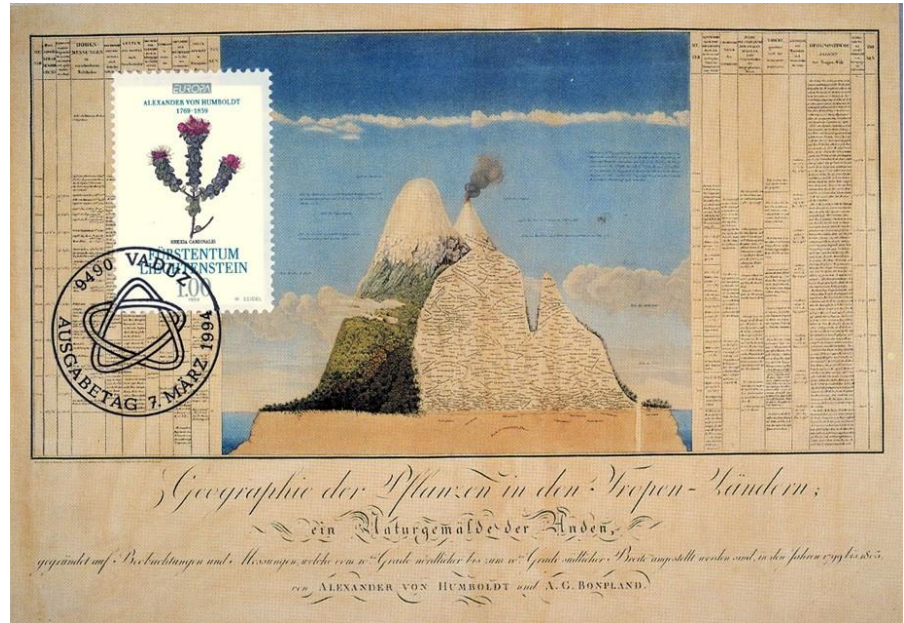


Fig. 43. "Geography of Plants" illustration with stamp honoring Humboldt Liechtenstein, 1994, Sc#1023



Fig. 44. Bicentennial of Humboldt's Visit Peru, 2002, Sc#1349a



Fig. 45. Darwin Ecuador, 1936, Sc#343